INFORMATION MANAGEMENT

Introduction

Today's digital age provides a vast variety of technology to support and integrate automated systems. Support technology provides new opportunities to incorporate or develop new techniques and procedures in the constantly changing digital age. Automated systems (applications) include expertise in application of systems to support wildland fire management and associated natural and cultural resource management activities. Automated system support includes systems analysis, research and design of hardware and software, system administration and management, system installation and configuration, user support, and ADP procurement management. The interagency wildland fire management community has developed a significant array of automated systems that provide analysis and decision support for fire or resource managers.

This chapter describes automated applications financially supported by the Fire Management Program Center; automated systems important to accomplishment of interagency fire and aviation management objectives; NPS standard software; and support technology.

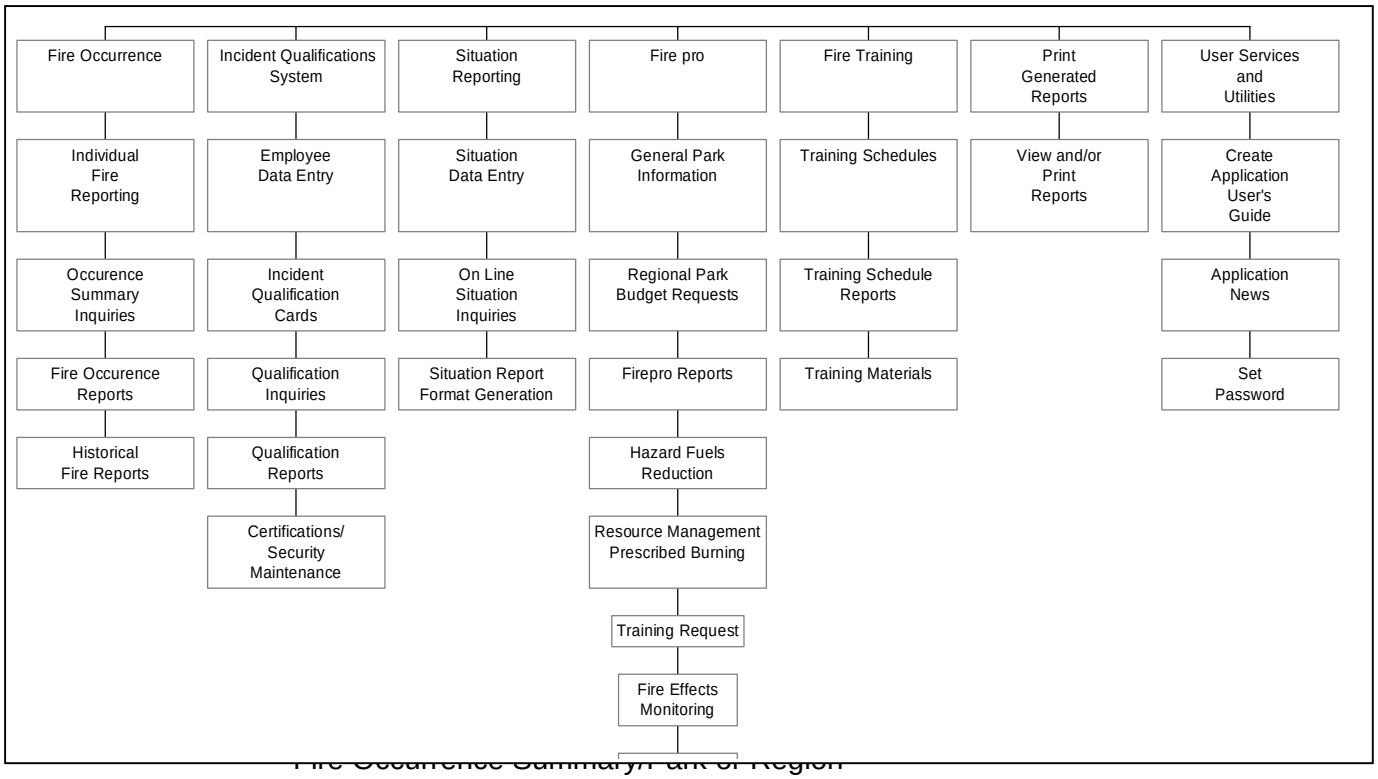
Fire Applications

Primary automated systems in support of fire management are housed on the Department of Interior's Shared Applications Computer System (SACS) in Boise, Idaho and the Weather Information Management System (WIMS) in Kansas City. Additional applications used by interagency fire and aviation activities reside on Personal Computers (PCs) and the Internet. Such applications include Fire Area Simulator (FARSITE), Rare Event Risk Assessment Process (RERAP), Fire Behavior Prediction and Modeling System (BEHAVE), First Order Fire Effect Model (FOFEM), Wildland Fire Situation Analysis (WFSA), the Fire Effects Information System (FEIS), and Fire Monitoring Handbook Software (FMHS), which will be available soon on SACS. (Additional software in support of wildland fire management is identified in the Wildland and Prescribed Fire Management Policy Implementation Procedures Reference Guide, chapter 4).

NPS Shared Applications Computer System (SACS) (http://fire.nifc.nps.gov/webterm/fire.asp)

The NPS Fire Management Program Center supports a variety of fire management applications developed by NPS and three other Department of Interior agencies. These applications are housed on a shared automated system referred to as the Shared Applications Computer System (SACS), located at the FMPC, Boise, Idaho.

The existing fire applications for each agency (NPS, BIA, FWS, and BLM) represent a vertically integrated wildland fire management information system. Each agency utilizing the system has a custom designed menu. Following is an overview of the applications on SACS for NPS:



Fire Occurrence Summary/Park or Region

Incident Qualifications and Certifications (IQS) (BIA/BLM/FWS/NPS). IQS tracks employee training, experience, certifications, and career development plans for DOI fire management personnel. The application was developed primarily to manage jobs under the Incident Command System, a management system used by Federal and many State and local wildland fire management agencies to deal with emergency situations. In addition, the system can manage any hierarchical structure that is training and experienced based.

A variety of on-line inquiries can be made of employee, job, and instructor data. This information can be displayed on screen or a hard copy can be generated. A variety of reports can be generated by the system as listed below:

- Red Cards by Alpha or SSN listing
- Employee/SSN Cross Reference Report
- Employee Master File by Unit Report
- Individual Employee Master File Report
- User's Guide
- Job/Training Description Report
- Critical Course Report

Situation Reporting (SITS) (NPS). SITS permits daily situation reporting by field user to describe emergency situation progress, availability of emergency response resources, and other information relating to emergency response. Current SITS revision tie-in with Occurrence reporting to ensure data integrity between the two systems.

The following reports generated by SITS consist of all situation activity that occurred during the proceeding 24 hours: the National Interagency Coordination Center Daily Situation Report, NPS Daily Situation Report (7:30 am), and NPS Daily Situation Report (11:30 am). All three reports are available on the Internet at the following location: http://fire.nifc.nps.gov/fire/firemenu.asp#.

FIREPRO/Fire Budget (NPS/BIA, separate applications). FIREPRO provides the analysis and budget information that is necessary to determine staffing and resource needs for fire management. Special resources and real property can be identified that will be at risk from wildland fire. FIREPRO also accepts information on permanent and seasonal staffing requests; capitalized equipment purchase requests; information on existing or proposed aircraft contracts; line item funding requests that covers a variety of activities unique to specific regional/national offices; hazard fuels reduction projects; resource management prescribed burn projects; long-term fire effects monitoring; fire equipment inventory and training budget. Fire occurrence data and Rx burning complexity data are used in analyses and calculations.

Three separate versions of budgeting applications are maintained to address unique systems used by BIA and NPS. The NPS application provides a five-tier system of entry, verification, and approval at the local, cluster parks, support offices, regional, and national levels. FIREPRO can generate the following reports:

- Regional Office Report
- Report of Parks within a Region
- Region-Wide Capital Equipment Priority Report
- National Personnel Report

- Capitalized Equipment Report

Fire Training (BLM/BIA/FWS/NPS/USDA FS). This application enables field users to review various training offered by cooperating state and federal agencies. Training data can be entered by designated personnel. Queries and reports provide selective viewing at the course, state, and regional levels.

The monthly multi-agency fire training schedule is posted on the Internet at the following address: http://fire.nifc.nps.gov/mats/matsframe.asp.

Printing (BLM/BIA/FWS/NPS/USDA FS). This application enables users to view and/or print reports generated from the above applications.

Utilities (BLM/BIA/FWS/NPS/USDA FS). Utilities permits users to generate application user guides, set passwords and any software changes or updates to software are documented under application news.

Access

There are three ways to access SACS:

- via commercial telephone lines to a modem pool
- DOINet or through an Internet access server or provider using a web browser
- USFS personnel can utilize their Data General or IBM network.

System Passwords

The log in process requires a password. Passwords are provided to users when accounts are initially set up. Initial passwords must be changed the first time the user logs onto the system. The first time you log into SACS the password will be pre-expired. The system will prompt you for the new password (your typing will not appear on your screen) and then prompt you to verify the new password a second time.

Passwords expire every 90 days. You can change your password with the menu option UZ. The system will prompt you for your old password, your new password, and your new password a second time for verification.

If you unsuccessfully try to log in more than three times in a few minutes, you will not be able to log on for about an hour; even if you have the correct username and password. The computer thinks you are trying to break into the system and is taking evasive action to protect itself. You can either wait an hour or so and try again OR call the SACS Computer Systems Manager who can override the protection mechanism.

A User's Guide for NPS applications on SACS and assistance for users of SACS is available from the Fire Management Program Center.

Weather Information Management System (WIMS) (http://fire.nifc.nps.gov/webterm/fire.asp)

The Weather Information Management System (WIMS) is a comprehensive system to manage forestry weather information nationwide. This system replaced AFFIRMS (Administrative and Forest Fire Information Retrieval and Management System) in March 1993, as the host site for the National Fire Danger Rating System (NFDRS). Both of the 1978 and the 1988-revisions of the NFDRS are available on WIMS. WIMS is used for maintaining fire weather observation catalogs, indexing, and forecast purposes. WIMS is designed to also accommodate the weather information needs of users throughout the Forest Service and other forestry and land management communities. It provides timely access to many sources of forestry weather data and related weather information; efficient tools for data management, processing and display; and a supportive interactive user's environment with access to data management.

A network of trained and experienced personnel are available to assist field users as primary support contacts when minor problems are encountered (e.g., gaining access via Internet, station cataloging inquiries, etc.). While these people will not be available to do the work for the field user, they will have the skills to accomplish some basic troubleshooting and problem resolution. In order for the support personnel to assist you, know your NPS WIMS login name. An example of this login name will be NPS####. The primary support personnel discussed above are the U.S. Forest Service, National Information Systems Team Support Group in Boise, Idaho at the National Interagency Fire Center. Following is their phone number:

- 800-253-5559
- 208-387-5282
- 208-387-5287

If you are not able to reach the above support personnel, the backup support personnel for the NPS at the Fire Management Program Center is Bruce Keene at 208-387-5220.

The NPS Fire Management Program Center funds interactive time costs with the National Computer Center system for all NPS fire management users. The FMPC absorbs the expense of the connection time and purchase of WebTerm software to provide access to WIMS.

User's Guide for WIMS

The user's guide is available through a menu driven printout request in the system or from the WIMS support staff at:

USDA – Forest Service
Attn: National Fire Weather Support Staff
National Interagency Fire Center
3833 S. Development Avenue
Boise, ID 83705-5354
800-253-5559 or 208-387-5282 or 208-387-5287

Access

There are four ways to access WIMS:

- the Internet using DOINet or a dial-up access server using a web browser
- SIMPC software
- AtoB software
- USFS personnel can utilize their Data General or IBM network.

Login and Passwords

To access WIMS/NIFMID, each user will need to obtain a log-on ID (LID). This is used to identify individual users, and to grant varying levels of access to the system.

There are currently three types of LID's available:

- Data Manager – full access and use authority
- Data Entry – limited access, cannot manipulate weather station catalogs
- Seasonal – same as Data Entry but limited duration access

Request for LID's should be directed to the Forest Service Support Staff in Boise, Idaho at 800-253-5559 or 208-387-5282 or 208-387-5287.

Request should include:

- Name of NPS Unit
- Name of User
- User's telephone number
- Access level needed (i.e., Data Manager, Entry, or Seasonal)
  -Seasonal LID's must be in the name of an already authorized Data Manager for the unit, and must provide the time period for which this access is requested.
  -Seasonal LID's are approved for the year of the request; subsequent renewed authorizations must be requested annually by the unit.

Expired Passwords and Log-on Violations

Passwords in WIMS will remain valid for 30 days. It is the user's responsibility to change the password accordingly or after 30 days the password expires.

The system allows no more than three unsuccessful attempts to log on after which the user is locked out of the system (suspended) and you must call the Support desk at 800-253-5559 or Bruce Keene (208-387-5220) to ask them to unsuspend your account.

WIMS File Transfer

To transfer files from WIMS use the Internet file transfer protocol (ftp) and an ftp server. FTP allows you to move data from WIMS to your local system (PC). The instructions are located at the following address: http://fire.nifc.nps.gov/webterm/fire.asp

National Park Service Fire Management Data CD-ROM

The FMPC has developed a Fire Management Data CD-ROM. This CD contains:

- Department of Interior fire occurrence (DI-1202) records for selected parks with prescribed fire programs.
- Associated fire weather data and station catalog information from the Weather Information Management System (WIMS).
- Software analysis programs to process the data.

Please direct any feedback to:

- NPS FMPC, Bruce Keene, 208-387-5220, bruce_s_keene@nifc.gov
- NPS FMPC, Gladys Crabtree, 208 387-5214, gladys_crabtree@nps.gov

System Requirements

This CD-ROM was designed for use on an IBM PC compatible computer. To take full advantage of the interactive interface, the PC must be running Windows 95/98 or Windows NT 4.0. All data and software included on the CD will work correctly on a Windows 3.x system. The use of the interactive interface also requires an Internet web browser such as Microsoft Internet Explorer 3.02 or Netscape Navigator 3.0.

The intent of this CD-ROM is to provide NPS wildland fire managers with ready access to historical data and software programs. The following software is on the CD-ROM.

WebTerm

The Fire Management Program Center has a site license for WebTerm for the fire community. This software is a plug-in that installs into your browser (Microsoft Internet Explorer or Netscape) to emulate a telnet session or TN3270 session to a host system such as SACS or WIMS. This software can also be used to access FFS, FPPS, or a number of host systems that need a telnet or TN3270 emulator. Access the above host systems using WebTerm at http://fire.nifc.nps.gov/webterm/

Fire Area Simulator (FARSITE)

Fire Area Simulator (FARSITE) is a spatially explicit fire growth model used to predict the size, intensity, spread, and rate of wildland fires that requires eight data layers as input: fire behavior fuel model, crown closure, crown height, stand height, crown bulk density, elevation, aspect, and slope. Additional information and software is available at the following web site:
http://www.fire.org/perl/tools.cgi

Rare Event Risk Assessment Process (RERAP)

Rare Event Risk Assessment Process is a Windows based program that helps calculate the information needed to manage fires. RERAP analyzes historical fire weather data in conjunction with fire behavior and fuel inputs to obtain probability calculations for three situations: probability of a rare weather event causing spread of the fire to a sensitive location; probability of a season-ending event; and probability of a significant smoke event. Additional information and software is available at the following web site: http://www.fire.org/perl/tools.cgi.

Fire Behavior Prediction and Fuel Modeling System (BEHAVE)

The BEHAVE Fire Behavior Prediction and Fuel Modeling system produces predictions of fire behavior for user-defined sets of environmental conditions. It provides methods for developing custom fuel models. BEHAVE is used for projecting behavior of active fires, for fire planning, for fuel assessment and for other fire management applications. Additional information and software is available at the following web site:
http://www.fire.org/perl/tools.cgi.

KCFast

KCFast is a PC application that simplifies weather data retrieval from the National Interagency Fire Management Integrated Database (NIFMID). Additional information and software is available at the following web site: http://www.fire.org/perl/tools.cgi.

Wildland Fire Situation Analysis (WFSA_Plus98)

The WFSA_Plus98 is designed to assist managers in developing and documenting the Wildland Fire Situation Analysis and Wildland Fire Implementation Plan. Additional information and software is available at the following web site: http://www.fire.org/perl/tools.cgi.

Fire Information Retrieval and Effects System (FIRES)

Fire Information Retrieval and Effects System is a PC application that provides methods for evaluating the performance of fire danger rating indexes. The relationship between fire danger indexes and historical fire occurrence and size is examined. Additional information and software is available at the following web site: http://www.fire.org/perl/tools.cgi.

First Order Fire Effect Model (FOFEM)

The First Order Fire Effect Model (FOFEM) is a PC application to predict the effects of fire. FOFEM predicts fuel consumption, smoke production and tree mortality. Area of applicability is nationwide on forest and non-forest vegetation types. FOFEM also contains a planning mode useful in prescribed fire prescription development. Additional information and software is available at the following web site: http://www.fire.org/perl/tools.cgi.

Fire Effects Information System (FEIS)

The Fire Effects Information System (FEIS) is a computerized encyclopedia of information describing the fire ecology of more than 1000 plant and animal species and plant communities. FEIS also contains a reference catalog of more than 26,000 entries, which are searched by keyword. FEIS can be accessed through the Forest Service home page at http://www.fire.org/feis.

Fire Monitoring Data Analysis

This application supports the NPS Fire Monitoring Handbook. It allows for entry, verification, and analysis of data collected from field measured fire effects plots. The application is distributed to individual units and installed on a workstation, field or handheld computer. Data are zipped and sent to a coordinator responsible for checking general data integrity, protocol compliance and data archiving. This application has been in effect since 1989. Several units are using the current version exclusively, serving as test sites. The Fire Monitoring Handbook will be located at http://fire.nifc.nps.gov/ soon.

FireFamily+

FireFamily+, currently under development by the USDA Forest Service, will combine the functionality from many programs into a suite of integrated programs on personal computers. PCFirDat and PCSeason (weather analysis programs) are included in FireFamily+. Climatological analysis using techniques developed in the mid-1980's will present more detailed weather statistics than available now. One major enhancement is the ability to group and analyze multiple weather stations.

FireFamily+ includes a local database for weather observations, weather stations, fire occurrences, and some reference data in a single database. Various programs will access the common database for analysis. Fire planning software (primarily PCHA), climatological analysis, fire danger analysis, and other tools will use the same data for a variety of purposes.

National Fire Danger Rating System Firefighter Pocket Card

This is an application that creates a color card showing 10-year average, maximum, and minimum NFDRS indexes or components for selected weather stations. The cards provide a quick reference for firefighters to assess fire danger. Additional information regarding the Fire Fighter Pocket Card is available at the following web site: http://fire.blm.gov/nfdrs/.

Prevention Workload Analysis

The Prevention Workload Analysis program calculates the staffing, program and funding needs to accomplish various fire prevention program levels. It provides comprehensive spreadsheets of fire prevention mitigation activities categorized as Education, Engineering, Enforcement or Administrative. It allows display of fire prevention program levels by geographic area or agency unit. It functions as a stand alone calculation and documentation tool for strategic fire prevention plans. This analysis software will be posted on the Internet at: www.fire.org/perl/tools.cgi, sometime during March 1999.

Geographic Information Systems (GIS)

GIS can be used to provide spatial data for other applications such as FARSITE. FARSITE is a spatially explicit fire growth model that requires eight data layers as input: fire behavior fuel model, crown closure, crown height, stand height, crown bulk density, elevation, aspect, and slope. GIS can be used to create a variety of maps. The most common GIS software is ArcView.

Interagency Document Exchange Standard

In June 1998, NWCG accepted an interagency document exchange standard. The following recommended document file formats offer the best editable document viewing and/or conversion between NWCG agency systems:

- Rich Text Format (RTF)
- HyperText Markup Language (HTML)
- American Standard Code for Information Interchange (ASCII) Paragraphs Format

The following format features are recommended:
- Fonts and Pitch: Courier 10 or Times 12
- Margins: Top, bottom, left and right = 1 inch

More details regarding the above interagency document exchange standard is posted on the NWCG home page at http://www.nwcg.gov/.

NPS Standard Software

Windows Operating System (OS)

The NPS workstation standard operating system is NT or WIN 95/98.

Microsoft Office

Microsoft Office Professional version 4.3 includes Word 6.0 (word processor), Excel 5.0 (spreadsheet), PowerPoint 4.0 (presentation – slide shows), and Access 2.0 (database). This is a 16-bit software package designed to run on Windows 3.x. It will run on Windows 95 and Windows NT.

Microsoft Office Professional for Windows 95 is a 32-bit program that offers more stability than Office 4.3, but it will only run on Windows 95 or Windows NT. This package includes

Word 7.0, Excel 7.0, PowerPoint 7.0, and Access 7.0. Word 7.0 has only minor differences from Word 6.0. Documents created in Word 7.0 can be read by Word 6.0 without any conversion. Spreadsheets created in Excel 7.0 can be read by Excel 5.0. Presentations created in PowerPoint 7.0 must be saved in an older format in order to be read by PowerPoint 4.0. Databases created in Access 7.0 must be converted in order to be read by Access 2.0 (backward conversion to MS Access 2.0 can cause loss of certain application features and functions, and are not easily converted). For users who will be primarily exchanging Word documents, Office Pro for Windows 95 will be okay.

Microsoft Office Professional 97 is the newest version of Microsoft Office. It is also a 32-bit program that will only run on Windows 95 or Windows NT. It includes Word 97 (a.k.a. Word 8), Excel 97, PowerPoint 97, and Access 97. All the applications (including Word) have completely different file formats than the older versions. A service pack is available from Microsoft that will allow you to save Word and Excel documents in older formats. No patch is available for Access 97. Exchanging Word documents with others will not be a problem as long as you have the patch AND as long as you don't use any of the new features included in Word 97 (and there are many new features – a list is available from Microsoft's web site).

Microsoft Office 97 Small Business Edition is bundled with many new computer systems. It includes Word 97, Excel 97, Publisher 97, and Office 97 Small Business Financial Advisor. Only purchase this if you need Publisher 97 and do not need Access or PowerPoint (and if you are willing to live with the other drawbacks and benefits of Office 97). Most computer vendors offer an upgrade to the Professional version of Office 97. Some offer an upgrade or substitution of Office Professional 95 (you'll probably have to ask—it may not show up on their price sheets).

Contact the computer specialist who supports your office if you have any questions about which version is right for you (and which version will be supported in your park/office).

Internet Browser

Access to the Internet or the World Wide Web (WWW) requires a browser. Two possible web browsers are Microsoft Internet Explorer (version 4.01) or Netscape Navigator (version 4.05) or higher. Both of these browsers support the Webterm plugin mentioned earlier.

Electronic Mail (cc:Mail)

The NPS has a site license for our electronic mail. The current software we are using is cc:Mail. The NPS will be migrating to Lotus Notes mail in the next year. Contact your local mail administrator to have access to the NPS servicewide mail system.

F-PROT

The NPS standard virus protection software is F-Prot. This software is updated periodically. There are several sites on the Internet where you can download the software. Contact your local computer support or the Fire Management Program Center for the current Internet location.

Computer Hardware and Other Equipment Recommendations

Computers (PCs and Notebooks)

Computer hardware continues to change with prices dropping on a daily basis. The following recommendations take into consideration that often high-end systems cam be purchased for a few more dollars. A key consideration is the **life (value) of the system**. Our goal is to take the end-user 3 or 4 years into the future if possible.

Check with the computer specialist(s) who support your office before ordering any computer hardware or software. He/she can advise you on what brands/models they are able to support and which additional features you may need or they would like your computer to have.

When ordering new hardware or software ask the vendor to certify Year 2000 compliant. Do not buy their product if they will not certify.

Recommended hardware requirements are published quarterly on the Internet at the following address: http://fire.nifc.nps.gov/.

Telecommunications

Electronic communication is critical to ensure you are able to access the above applications. There are numerous avenues available to you depending on your situation. Following is a list of alternatives to consider:

- Local Area Network (LAN) which might give you access to a Wide Area Network (Wan).
- Dial-up access using a modem, cellular or satellite phones, or Wireless.

The above electronic communications will give you access to the Internet.

Miscellaneous Technology

There is an ever widening assortment of technology that can be utilized to help be more responsive to demands of the fire community, be more efficient, process more data, and support faster and better decisions. Following is a brief list to consider:

- Digital Cameras
- Digital Video Cameras
- Portable Weather Stations
- Global Positioning Systems (GPS)
- Pagers
- Various internal and external storage devices
- Palmtop computers
- Personal Digital Assistants (PDAs)
- Scanners
- Printers (Black/White or Color)

The above technology continues to emerge and be in a constant state of change.